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DEChub 900 MultiSwitch™ Release Notes
Firmware Version V3.1
August 1994

These release notes contain firmware and software requirements, and known conditions and restrictions of the DEChub 900MultiSwitch.

Current release note information can be found online. Refer to Appendix B of the *DEChub 900 MultiSwitch Owner's Manual* for information about retrieving release notes.

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Firmware Requirements

DEChub 900 MultiSwitch firmware version V3.0 or higher must be installed to manage the following network modules:

- DECbridge 900MX

- DECconcentrator 900MX

- DECrepeater 900GM

- DECrepeater 900FP

- DECrepeater 90FS

- DECrepeater 90TS

Digital recommends that you update your network modules to the latest revision.

Software Requirements

If you are using HUBwatch to manage your DEChub, you must install HUBwatch software version 3.1 or higher once you install Hub Manager firmware version V3.1.

When you use HUBwatch version V3.0 with Hub Manager firmware version V3.1, the Station Configuration window does not display port numbers.

Known Conditions and Restrictions

The following is a list of DEChub 900 MultiSwitch Version V3.1 conditions and restrictions.

- When you update your DEChub 900 to version V3.1 from version V3.0, all nonvolatile data stored in the Hub Manager is **retained**.

- You can remove network modules from the DEChub while the power is either on or off.

- To propagate a change to the community string of an operational hub, perform the following:

  – Set the read/write community string for the Hub Manager.

  – Reset the Hub Manager.

  – Start HUBwatch, specifying the community string on the command line.

- The Hub Manager provides nonvolatile store for the port status of DECrepeater 90 network modules. When performing a reset system to factory defaults, the Hub Manager resets all the DECrepeater 90 ports to enable.

- When connecting a terminal to the setup port, configure the terminal for jump scroll because the Hub Manager does not support flow control.

- When removing more than one operational power supply from the DEChub 900, wait at least 10 seconds between removing of supplies in order to give the Hub Manager sufficient time to recalculate available power.

- If you are using a DECserver 90TL or a DECserver 90M as a SLIP server on the OBM port, disable AUTOBAUD and enable AUTOCONNECT.

- Some network modules do not support the Hub Manager's setup port redirect mode option. Refer to your product documentation for further information.

- When using the DECrepeater 900TM with firmware version V1.0G as your IP services module, outgoing traps from the Hub Manager are not sent unless the DECrepeater 900TM has its own IP address assigned.

- When using the DECrepeater 900TM with firmware version V1.0G as your IP services module, a Hub Manager firmware update cannot be performed in-band unless the DECrepeater 900TM has its own IP address assigned.

- To manage a DECserver 90TL or DECserver 90M using HUBwatch, you must add the module's IP address to the HUBwatch agent's file. For further information, refer to the *HUBwatch Installation and Configuration* manual, part number AA–Q0FXB–TE.

- Wait 15 seconds after making LAN connections before doing a Hub Manager firmware update. This allows the changes to be written to nonvolatile storage.

- When updating the Hub Manager along with network modules, update the Hub Manager to version V3.1 before updating network modules.

- If a network module with FDDI backplane LAN connections fails upon powerup wrapping the FDDI ring it is connected to, perform the following steps:

  1. Remove the faulty network module while power is applied to the DEChub.

  2. Remove and reinsert all other network modules connected to this FDDI ring.

  3. Insert any additional modules you want to connect to the FDDI ring.

  4. Reconfigure all network modules and FDDI backplane LAN connections that were associated with the wrapped FDDI ring using the HUBwatch LAN Interconnect screens.

- When an FDDI module with backplane LAN connections is removed from a DEChub that is powered off, the DEChub will power up with the FDDI ring in a wrap condition. To restore the FDDI ring, reinsert the same type of module that is known to be good, or reconfigure all network modules and FDDI backplane LAN connections that were associated with the wrapped FDDI ring using the HUBwatch LAN Interconnect screens.

Updating the Hub Manager Firmware

You can perform a firmware update to the Hub Manager in either of two ways:

1. By using the DECndu Plus Utility

2. By selecting option [9] on the Hub Manager installation menu

NOTE: Prior to performing a firmware update using either of these methods, read through the next section entitled The Downline Upgrade (DLU) Process. The section contains a detailed process description of how the Hub Manager behaves during and after a firmware update.

For instructions on using DECndu Plus to perform an update, refer to the section entitled Updating Hub Manager Firmware using DECndu Plus.

For detailed instructions on performing an update from the Hub Manager installation menu, refer to the section entitled Updating the Hub Manager using the Setup Port.

The Downline Upgrade (DLU) Process

The Downline Upgrade Process occurs when you perform either a firmware update using DECndu Plus, or by using the Downline Upgrade (DLU) option [9] from the setup port. The DLU process consists of four stages:

•   Stage 1 — Transferring Firmware Image

•   Stage 2 — Verifying Firmware Image

•   Stage 3 — Writing New Firmware Image into Nonvolatile Storage

•   Stage 4 — Module Reset and Self-Test

Table 1 describes what happens during each stage of the DLU Process.

Table 1   DLU Process Description

Stage	What Happens

1   **The new firmware image from the TFTP load host is transported across the network, and placed into a temporary storage buffer in the Hub Manager.**

Indications that this stage is in progress include:

• Hub Manager status — functional and manageable.

• Hub Manager can respond to management requests.

• Hub Manager display   SW Loaded from   **Note:** This display occurs once, and then
IP: 1.1.1.1   normal display status continues.

• Typical time to complete this stage — normally 1 minute. However, because of variances in network configurations (load path, bit rate, and traffic levels), this stage of the DLU process can take up to 10 minutes to complete.

2   **The Hub Manager verifies that the firmware image is correct after Stage 1 is complete.**

Indications that this stage is in progress include:

• Hub Manager status — functional but not manageable.

• Hub Manager cannot respond to management requests.

• HUB Manager display   SW Loaded
Checking Image. . .

• Typical time to complete this stage — normally 5 seconds.

3   **The new firmware image is transferred from the Hub Manager's temporary storage buffer to the Flash RAM, overwriting the old firmware image.**

CAUTION ⚠   If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

Indications that this stage is in progress include:

• Module status — not functional.

• Module cannot respond to management requests.

• HUB Manager display   Image OK,   **followed**   Image Stored.
Writing Image. . .   **by**   Booting New Image

• Typical time to complete this stage — normally 75 seconds.

4   **The Hub Manager resets, runs self-test, and then begins executing the new firmware image.**

Indications that this stage is in progress include:

• Module status — not functional.

• Module cannot respond to management requests.

• HUB Manager may display   Software Upgraded,   **always**   Selftest Complete
Configuration Reset.   **followed by**   Start Main Firmware

• Typical time to complete this stage — normally 45 seconds.

• At the completion of self-tests, the Hub Manager starts the main firmware, and the setup port screen displays the DEChub 900 MultiSwitch installation menu.

Installing Hub Manager Firmware Version V3.1

When you update your Hub Manager to version V3.1 from version V3.0, all nonvolatile data stored in the Hub Manager is retained. When you update your DEChub 900 to version V3.1 from a version prior to V3.0, all nonvolatile data stored in the Hub Manager is cleared.

If you are updating your Hub Manager from a version prior to V3.0, record your backplane LAN configuration before upgrading. After updating the HUBwatch LAN interconnect view reflects an initialized backplane. All backplane flexible channel connections are deleted and all repeaters have their initial backplane connections to the ThinWire. Connections made to the front panel are unchanged.

Perform the following steps to update your Hub Manager from firmware version V2.x to firmware version V3.1:

1. Use DECndu Plus, or the setup port to downline load firmware version V3.1 from your load host to your DEChub 900.

2. If you are using the setup port, be sure you have a setup port device connected to the setup port on the Hub Manager.

Stage 1 – Transferring Firmware Image

This stage begins when the new firmware image is transferred across the network and placed into the module's temporary storage buffer. During this stage, the module is functional and can respond to management requests.

NOTE: Because of variances in network configurations (load path, bit rate, and traffic levels), this stage of the DLU process can take up to 10 minutes to complete.

During this time, the Hub Status Display displays the following (example) message:

```
SW Loaded from
IP:  16.20.40.155
```

When the TFTP load transfer is complete, and the TFTP image is verified, the device becomes nonfunctional and the flash load process begins. (The flash load process can take up to 4 minutes to complete.)

Stage 2 – Verifying Firmware Image

After the new firmware image is loaded into the Hub Manager's temporary storage buffer, the new firmware image is checked. During this stage, the Hub Manager is functional but cannot respond to management requests.

When the TFTP load transfer is complete, the Hub Manager verifies the TFTP image. During this time, the Hub Status Display displays the following message:

```
SW Loaded,
Checking Image . . .
```

This stage takes approximately 5 seconds to complete, then Stage 3 of the DLU process begins.

Stage 3 – Writing New Firmware Image into Nonvolatile Storage

After the new firmware image is validated the DLU process overwrites the old firmware image, in the Hub Manager's Flash RAM, with the new firmware image. During this stage the Hub Manager is not functional and cannot respond to management requests. During this time, the Hub Status Display displays the following message:

CAUTION ⚠ If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

```
Image OK,
Writing Image . . .
```

After the Hub Manager stores the image into flash memory, it boots the new image. During this time, the Hub Status Display displays the following message:

```
Image Stored.
Booting New Image.
```

This stage takes approximately 30 seconds to complete, then Stage 4 of the DLU process begins.

Stage 4 – Hub Manager Reset and Selftest

This stage begins after the new firmware image is written into the Hub Manager's Flash RAM. The Hub Manager resets, then runs self-test. During the reset and self-test of this stage, the Hub Manager is not functional and cannot respond to management requests.

This stage takes approximately 1 minute to complete.

After the Hub Manager completes booting the new image, it may reset the configuration settings. If a reset occurs during this time, the Hub Status Display displays the following message:

```
Software Upgraded,
Configuration Reset.
```

Next, the Hub Manager initiates self-test. When self-test completes it starts the main firmware. During this time, the Hub Status Display displays the following message:

```
Selftest Complete
Start Main Firmware
```

After the Hub Manager starts the main firmware, the setup port screen displays the DEChub 900 MultiSwitch installation menu, confirming the downline load is complete.

1.   If you are updating the Hub Manager from a version prior to V3.0, perform the following steps:

   •   Select option 7, Dump Error Log, from the DEChub 900 MultiSwitch main menu. The error log should contain a configuration cleared entry. An example follows:

   ```
   SW    V2.2.1  -> V3.1.0;    Config cleared
   ```

If the above message does not appear, initiate the downline load process from the beginning.

> **NOTE:** If you are updating your Hub Manager from version V3.0, you will not have an error log entry.

   •   From the DEChub 900 MultiSwitch main menu, select Set In-Band Interface IP Address option and enter your in-band IP address.

   •   If you are using the OBM port, select the Set Out-Of-Band Interface IP Address option and enter your out-of-band IP address

2.   Load HUBwatch version 3 on your network management station. If you loaded HUBwatch version 3 prior to performing this firmware update procedure, you must restart HUBwatch.

3.   You have now completed the update procedure.

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Updating the Hub Manager Firmware Using DECndu Plus

You can use DECndu Plus to downline load new firmware to the Hub Manager from a workstation running OpenVMS VAX or PC running MS DOS.

The Hub Manager firmware image name is `dmhub310.bin`. This file is located in the DEChub Consolidated Firmware Kit V1.1 for OpenVMS and MS–DOS and in the firmware subdirectory of the Internet directory.

Updating Firmware from an OpenVMS VAX Workstation

To downline load new firmware from an OpenVMS VAX workstation to the Hub Manager when the community string is "public", use the following command:

```
$ download load/force=hubmanv2/module=9 <IP address>
   <dir_spec>:<image_file>
```

Example:

```
$ download load/force=hubmanv2/module=9 16.20.168.45
mom$load:dmhub310.bin

(c) Digital Equipment Corporation. 1993. All Rights Reserved.

HOSTNAME: rhodes

Server: 16.20.216.48

DECNDU: (TFTP) Target address = 16.20.168.45
[HUBMANV2] Getting sysDescr
    Hub900MultiSwitch,DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V3.0.0
[HUBMANV2] Setting (ChasLoadEntryStatus) to CreateRequest (2)
[HUBMANV2] Set load host IP address (ChasLoadIpHostAddr)
    16.20.216.48
[HUBMANV2] Setting load filename
    MOM$LOAD:DMHUB310.BIN
[HUBMANV2] Setting (ChasLoadEntryStatus) Valid (1)
    1
[HUBMANV2] Setting (ChasLoadAdminStatus) Start-read (2)
[HUBMANV2] STARTING TFTP SERVER DECNDU: (TFTP) Blocks sent = 948
DECNDU: (TFTP) Transfer Complete.
[HUBMANV2] TFTP DOWNLOAD COMPLETED
```

To downline load new firmware from an OpenVMS VAX workstation to the Hub Manager when the community string is other than "public", use the following command:

```
$ download load/force=hubmanv2/module=9/pass=<setcommunity>
<IP address> <dir_spec>:<image_file>
```
where <setcommunity> is the Hub Manager's read–write community string.

Example:

```
$ download load/force=hubmanv2/module=9/pass="engineering"
16.20.168.45   mom$load:dmhub310.bin
```

NOTE: Enclose the community string with double quotes (” ”) to preserve lowercase characters.

See the previous example for a display of the DECndu Plus messages that appear when you issue this command.

Updating Firmware from a PC

To downline load new firmware from a PC to the Hub Manager when the community string is ”public”, use the following command:

```
A:\> decndup /u /f hubmanv2 /m 9 <IP address> <path>\<image_file>
```

Example:

```
A:\>
decndup /u /f hubmanv2 /m 9 16.20.168.45 C:\firmware\dmhub310.bin

(c) Digital Equipment Corporation. 1993. All Rights Reserved.

 [HUBMANV2] Getting sysDescr
    Hub900MultiSwitch,DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V3.0.0
 [HUBMANV2] Setting (ChasLoadEntryStatus) to CreateRequest (2)
 [HUBMANV2] Set load host IP address  (ChasLoadIpHostAddr)
   16.20.36.30
 [HUBMANV2] Setting load filename
   C:\firmware\dmhub310.bin
 [HUBMANV2] Setting ChasLoadEntryStatus) Valid (1)
 [HUBMANV2] Setting (ChasLoadAdminStatus) Start-read (2)
 [HUBMANV2] STARTING TFTP SERVER
 BLOCKNo = 949   BYTES = 485376
 [HUBMANV2] TFTP DOWNLOAD COMPLETED
 DECnduPlus: SUCCESS
```

To downline load new firmware from a PC to the Hub Manager when the community string is other than "public", use the following command:

```
A:\> decndup /u /f hubmanv2 /m 9 /p <setcommunity> <IP address>
<path>\<image_file>
```
where <setcommunity> is the Hub Manager's read–write community string.

Example:

```
A:\> decndup /u /f hubmanv2 /m 9 /p engineering 16.20.168.45
 C:\firmware\dmhub310.bin
```

See the previous example for a display of the DECndu Plus messages that appear when you issue this command.

Verifying the DECndu Plus Firmware Update

Once the firmware has been loaded into the device, it takes several seconds for the firmware to be written into the flash RAM and to perform a reset in order to begin running the new code. To verify that the new version of firmware is up and running after the reset, issue the following DECndu Plus command:

Using the OpenVMS command:

```
$ download show device <IP address>
```

Example:

```
$ download show device 16.20.168.45

(c) Digital Equipment Corporation. 1993. All Rights Reserved.
[SYSDESCR] Getting Device INFO (sysDescr)
    Hub900MultiSwitch,DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V3.1.0
```

Using the MS–DOS command:

```
A:\> decndup /s <IP address>
```

Example:

```
A:\> decndup /s 16.20.168.45

(c) Digital Equipment Corporation. 1993. All Rights Reserved.
[SYSDESCR] Getting Device INFO (sysDescr)
    Hub900MultiSwitch,DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V3.1.0
DECnduPlus: SUCCESS
```

Consult your DECndu Plus documentation if you need more detailed information on using the utility.

Getting Help on DECndu Plus

To get help while using DECndu Plus, type the following:

For OpenVMS VAX:

`$ HELP DOWNLOAD`

For MS–DOS:

`A:\> decndup /?`

Updating the Hub Manager Firmware Using the Setup Port

You can use the Setup Port to downline load new firmware to the Hub Manager. Once the firmware is loaded into the Hub Manager, you can verify that you have version V3.1 installed by selecting the `Show Current Settings` option from the main installation menu.

The Hub Manager firmware image name is dmhub310.bin. This file is located in the DEChub Consolidated Firmware Kit V1.1 for OpenVMS and MS–DOS and in the firmware subdirectory of the Internet directory.

Updating Firmware from the Hub Setup Port Menu

Downline upgrade option allows you to upgrade the Hub Manager firmware and network module firmware (in nonvolatile Flash memory). It prompts you to enter the IP address of your TFTP (Trivial File Transfer Protocol) load host and the image file name.

The format of the image file name is specified according to the conventions used by your TFTP load server.

The following description takes you through the downline upgrade procedure and explains the events that occur within each selection. A full screen example of the setup screen display follows the description.

You can access the setup port by selecting option 9, `Downline Upgrade from` the
DEChub 900 MultiSwitch Installation Menu.

When you select the option, the initial setup screen display appears (see the following exam-
ple display). This screen identifies the option and alerts you to be sure that the power to the
device is not interrupted during the downline load.

```
========================================
                Enter selection : 9

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========================================

                    DOWNLINE UPGRADE

        This process upgrades the specified device's firmware
        (in nonvolatile Flash memory).  Enter the IP address
        of your TFTP (Trivial File Transfer Protocol) load host
        and the image file name when prompted.


    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
    *       IMPORTANT!          IMPORTANT!          IMPORTANT!     *
    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
    *                                                        *
    *   If power is interrupted during the downline load, the   *
    *   firmware image can be corrupted. Do not turn off power  *
    *   to the unit or perform any action that can cause the    *
    *   unit to lose power during a downline upgrade.           *
    *                                                        *
    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

========================================

        ... Press Return Key to Continue...
```

The following events occur after you: (1) select the option, (2) enter the slot number to be upgraded, enter the load file name, and enter the load host IP address, and (3) press Return when prompted. Below is an example of the setup port screen display dialog using a network module with IP services in Hub slot 8.

When both in-band and out-of-band IP addresses are assigned, two network interfaces are available to choose from.

When the downline upgrade firmware reads more than one IP address (therefore more than one network interface), it prompts you to choose a network interface to use for the load request.

After you press Return, the setup screen displays the following:

```
     Load will be initiated over Hub Slot 8 network interface.

 Would you like to use a different interface? Y/[N]:
```

If you choose the default [N], the setup screen displays the following message:

```
     The device becomes nonfunctional for up to 10 minutes
     during the time that the flash load is in progress.

 ... Press Return Key to Start Load ...
```

Pressing Return initiates the load over the in-band network interface.

If you choose **Y** at the screen prompt, the setup screen displays the following:

```
     Interface    Description
     ---------    -----------
         1        OBM Port
         9        Hub Slot 8

 Enter the network interface to be used [9]:
```

Select the desired network interface, then press Return. The setup screen displays the following message:

```
     The device becomes nonfunctional for up to 10 minutes
     during the time that the flash load is in progress.

... Press Return Key to Start Load ...
```

Pressing Return initiates the load over the selected network interface.

The following setup port screen is an example of the dialog you see when you update the Hub Manager using a network module with IP services in Hub slot 8.

```
=======================================
Enter the slot to be upgraded [9] (Hub Manager) :   Return

Enter the load filename [ ] : filename.ext  Return
Enter the Load Host IP address [ ] : 16.20.40.155  Return

   Load will be initiated over Hub Slot 8 network interface.

Would you like to use a different network interface Y/[N] :  Y  Return

         Interface   Description
         ---------   -----------
         1           OBM Port
         9           Hub Slot 8

Enter the network interface to be used [9] :    Return

     The module becomes nonfunctional for up to 10 minutes
     during the time that the flash load is in progress.

    ...Press Return Key to Start Load [Ctrl/C to abort] ...

DLU process started!
.............................................................
..........


Transfer complete.
```

This screen dialog appears only when you select **Y** to use a different network interface.

If you are upgrading a network module, enter its slot number, then press Return.

Select **Y** if you want to use the OBM port, then press Return.

Verifying the Setup Port Firmware Update

You can verify the firmware update by selecting the DEChub 900 MultiSwitch Installation Menu, option 3, Show Current Settings. This option displays the current version of firmware installed in the Hub Manager. An example of the display is shown below.

Example: Show Current Settings display

```
=========================================
                Enter selection : 3

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  DEChub900MultiSwitch,DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V3.1.0
  SysUpTime                            : 11 days 18:52:25   100 resets
  SNMP Read/Write Community            : public
  SNMP Trap Addresses                  : Not Configured
  Status of last Downline Upgrade      : 00:40:39   27 resets
                                         Load Successful
  In-Band Interface status             : Active
  In-Band Interface IP Address         : 16.20.155.45 Slot number : 8
  Out-of-Band (OBM) Interface IP Address  : 16.20.156.46
  Out-of-Band (OBM) Management Port Speed : 9600
  Hub Name                             :
  Hub Serial Number                    :
  Hub Location                         :

=========================================

          Press Return for Main Menu ...
```

The current firmware version is displayed here.

MIB and RFC Information

The DEChub 900 Hub Manager, when acting as a Hub Master, provides an SNMP proxy agent for DEChub 90 repeaters that do not contain their own SNMP agent. In this configuration, the following MIBs are supported:

- IETF repeater MIB, RFC 1516

- DEChub 900 IETF repeater MIB extension

- sysGroup of MIB II, RFC 1213

MIB and RFC information can be found online. Refer to Appendix B of the *DEChub 900 MultiSwitch Owner's Manual* for information about retrieving MIBs and RFC.